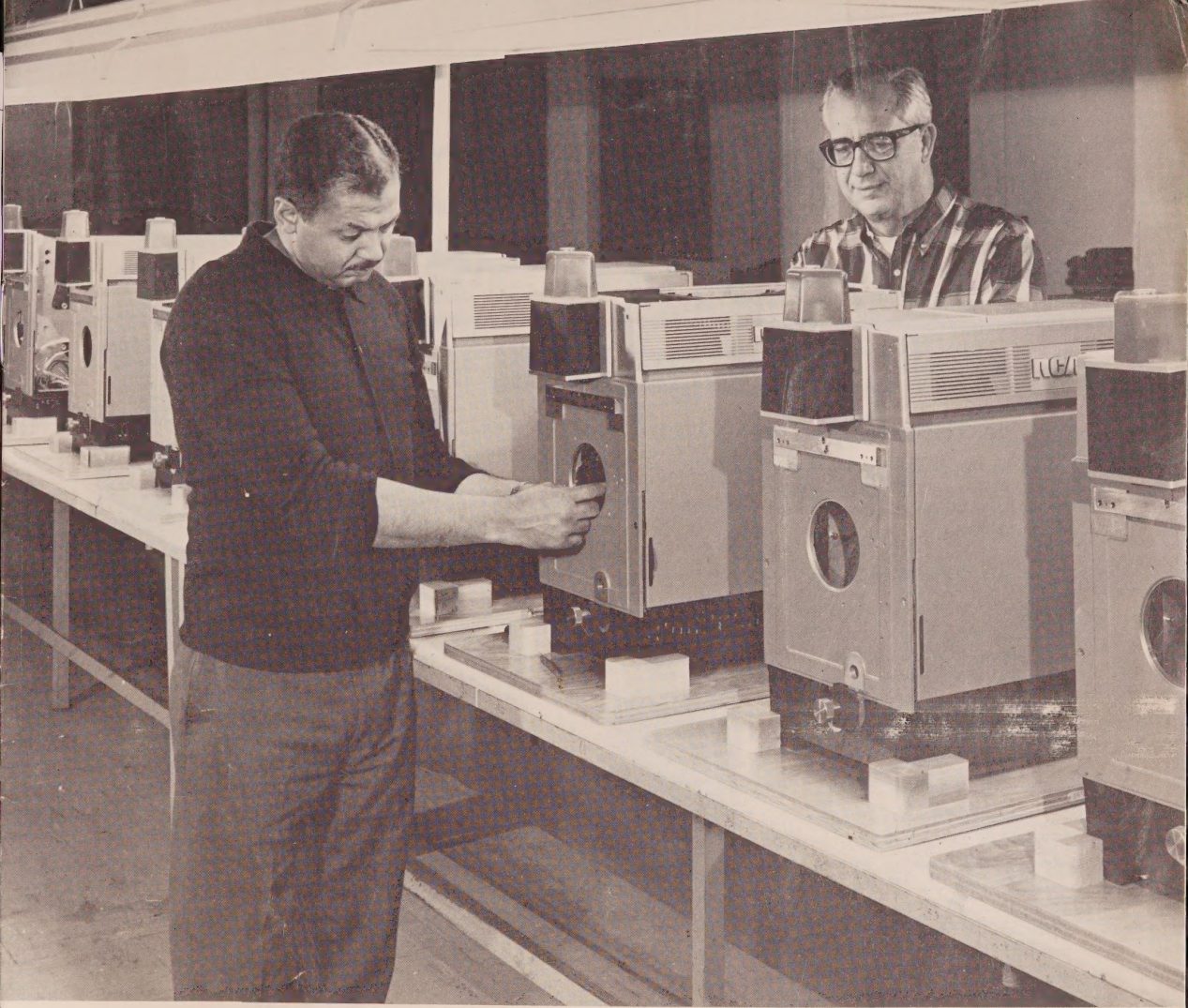

TECHNICIAN ENGINEER

MARCH, 1969

ROLAND KISSLER
BOX 956
MOSES LAKE WASH 98837

545642 EWTE L 77

Published for the Employees of the Broadcasting, Recording and Related Industries

INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS — AFL-CIO

A BACKWARD GLANCE

What was it like in communications and science 50 and 100 years ago? The items below, culled from the electrical and broadcasting magazines of the Smithsonian Institution's Library in Washington and other sources of information, reveal a few surprises about "modern" technology, while exploring the byways of the industries that gave birth to broadcasting and recording.

20 YEARS AGO

It was on March 10, 1949, that "Axis Sally" was convicted of treason for her Nazi broadcasts from Germany in World War II.

40 YEARS AGO

Early in 1929 a new president of the Columbia Broadcasting System was named, William S. Paley. CBS originated in 1927 as an outgrowth of the United Independent Broadcasters and the Columbia Phonograph Broadcasting System.

70 YEARS AGO

On March 3, 1899, Marchese Guglielmo Marconi first demonstrated the life-and-death value of wireless. His wireless telegraphy was credited on that date with saving life at sea. A lightship had been run down by a steamer. The accident was at once reported by wireless to the South Foreland lighthouse near Dover in England, a distance of about 12 miles. Lifeboats were promptly sent to the assistance of the stricken lightship. The wireless devices were set up by the Wireless Telegraph and Signal Co., Ltd., a company set up in 1897 to acquire the Marconi patents in all countries except Italy. This company changed its name to Marconi's Wireless Telegraph Co., Ltd. in 1900.

A second wireless event took place in March of 1899 which demonstrated to the Western world the far-reaching possibilities of wireless. On March 27, Marconi sent and received his first wireless signals across the English Channel. Later in the year wireless was utilized in British Navy maneuvers for communication between warships over distances up to 74 miles.

35 YEARS AGO

The First Lady of the land in 1934, Mrs. Eleanor Roosevelt, became a paid radio performer early in the year, broadcasting over a nationwide network on a regular weekly program basis. Between 1934 and 1939 Mrs. Roosevelt earned an estimated $150,000—all of which she turned over to charity.

According to Ruby Black's book, *Eleanor Roosevelt*, the President's wife used the radio media to improve her speaking ability which, she said, did not come naturally. Between 1934 and 1939 Mrs. Roosevelt, according to the author, "was slowly acquiring a radio technique. Her series of the Selby Shoe Co. provided her best training. She rehearsed constantly and faithfully, under skilled direction, went over and over her script to make it fit the time allotted, down to the last second. She also took lessons in speech to learn how to breathe properly and to keep her voice from skidding up into the higher registers." Her contracts as a women's commentator specified occasional remote broadcasts which were made from various locations and often she went back to radio stations at midnight to rebroadcast her programs for the West Coast.

The INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS

CHARLES H. PILLARD — International President
JOSEPH D. KEENAN — International Secretary
HARRY VAN ARSDALE, JR. — International Treasurer

ALBERT O. HARDY — Editor, Technician-Engineer

TECHNICIAN ENGINEER

VOL. 18 NO. 3

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the cover

The TV industry's most advanced color studio camera, the new TK-44A from RCA, is shown in volume production at the company's Camden, N.J. plant. First units of the new three-tube camera were shipped to WBAP-TV, Fort Worth, Texas, where they will be used in the station's mobile TV van.

index

For the benefit of local unions needing such information in negotiations and planning, here are the latest figures for the cost-of-living index, compared with 1968. January, 1968—118.6; January, 1969—124.1

commentary

A recent issue of a trade magazine pointed out, editorially, that there is a shortage of service technicians and that the Service Committee of the Electronics Industry Association believes the problem can be stated in one word—"motivation." For a definition of the word the editor turns to Dr. Victor Howard, who says "Motivation is a pyramid of values an employee wants and needs. Physiological needs are at the base, followed by safety or security needs, then social needs, ego needs, and finally the need for self-fulfillment."

The broadcasting and recording industries would do well to savor these words. Attraction of new and young technicians is a steadily-increasing problem, in the labor market where more and more jobs in electronics are demanding more and more personnel. Broadcasting had an image of importance once and it could again if it can turn away from the dull, repetitive nut and bolt factory philosophy of the past few years. Aside from the wages, hours and working conditions, today's employee and prospective employee is looking for something offering inner satisfaction on a job in which he can take pride.

Published monthly by the International Brotherhood of Electrical Workers, AFL-CIO, 1200 Fifteenth St., N.W., Washington, D. C. 20005, for the employees of the broadcasting, recording, and related industries. Second class postage paid at Washington, D. C. Subscription, $2 per year.

A brief broadcast engineering history:

131 Years of 'Modern

• On January 24, 1838, a practical telegraph emerged from the laboratory for demonstration to the world and electrical engineering was born. Following in quick succession came the telephone, a cable linking Europe, and the wireless.

It was wireless that reshaped the communications concepts of the world, and has since affected the very history of nations. Wireless devices have become the avenues of commerce and the toys of children, the voice of propaganda, and the source of news and entertainment to audiences anywhere in the world.

In the relatively short time that wireless has been known to mankind, the broadcast engineering profession has risen to tear away at the obstacles which impede and restrict wireless communication. The technological advances have never ceased since Marconi began unravelling the wireless mysteries near the turn of the 20th century. In its earliest stages in America, Marconi's wireless took the form of "spark" stations along the eastern coast and the West Coast all the way up to Alaska.

These long wave, low frequency stations—most often shrouded in static—performed a variety of functions such as keeping department stores in different stores in contact with one another, giving a boost in reporting speed to newspapers, and connecting ship and shore facilities of export-import companies.

From an equipment technology standpoint, it was the synchronized rotaries which literally "sparked" transmitter design in the early years. Excited by vibrators at the end of autotransformers, open spark-coils with tuned circuits appeared in ship installations for over 30 years. With more power ever the goal, wireless engineers abandoned the spark coil and invented rotary-spark transmitter powered by transformers immersed in oil. Unsynchronized at first, they emitted enough rough notes of low penetrating power. Soon, however, engineers synchonized the charge-and-discharge timing to produce a 500-cycle note that pierced static better and made distance records more dependable. Rotaries appeared aboard ships as well as in land stations.

Powerful land stations tolerated the din which accompanied the rotaries by housing them in separate buildings, nicknamed "thunderhouses," many using 25 kw with big blowers to extinguish the spark between each dot and dash. Tropical Radio in New Orleans combined two 25 kw units and linked the United Fruit Company's vast banana empire together. The early operators, called "fists," were masters of the transmitter and their unfailing accuracy brought them respect and often leadership in their profession. The New York "fist" of the John Wanamaker Stores' private wireless system was David Sarnoff, who later rose to head the Radio Corporation of America.

The development of better receiving equipment progressed rapidly, too. Inventions pacing receiver progress include the coherer (invented by French physicist Branley) for reception of electromagnetic waves, the electromagnetic detector (developed by DeForest) which modulated an arc transmitter and broadcasted a program from the Metropolitan Opera shortly after the turn of the century. This was superceded by the crystal detector, which—as forerunner of today's solid state engineering—saw service right into the early years of the broadcast era.

Then came World War I, and tubes were developed for Signal Corps uses. These spread into commercial uses following the Armistice. In 1920, Westinghouse eliminated telegraph charges by handling traffic between their East Pittsburgh and Springfield, Mass., plants with homemade tube transmitters. These master-oscillator/power-amplifier rigs contained tubes without bases. Protruding glass ends at top and bottom of the bulbs snapped into fuse clips wound with asbestos string.

General Electric at the time concentrated on a radiotelephone tube design ordered by the U. S. Navy. Engineering in general considered tubes suitable mainly for low-to-medium power, low frequency, short-distance work.

The newly-formed Radio Corporation of America moved forward with the Alexanderson alternator, a high-frequency device that combined power with continuous waves. Actually the alternator was built by GE, and occupied a bedplate 10 feet wide and 18 feet long. Three-ton rotors mounted on 8-inch shafts revolved 20,000 rpm to produce up to 26 kilocycles at 200 kw. Speed and number of poles determined the exact frequency. Fed into longwire antennas held aloft by a series of towers 450 feet high, the continuous-wave radiations easily reached to distant continents.

Wireless, called "radiotelegraphy" and "radio telephony" by the U. S. Navy to distinguish between code and voice, brought many engineering-minded young men into the field of radio, probably spurred by amateur-set building efforts.

It was the amateur radio builders at Westinghouse

Communications'

Long waves to lasers and cat whiskers to semi-conductors

who, in their homes and in spare time, developed the world's pioneer radio broadcast station, KDKA. Licensed to Westinghouse October 27, 1920, KDKA began commercial broadcasting the next month with the Harding-Cox presidential election returns. The following summer RCA arranged the radio broadcast of the Dempsey-Carpentier fight in Philadelphia, using a transmitter built by General Electric for the Navy, and the call letters WJY assigned by the Department of Commerce for the one-time broadcast.

Other stations and other broadcasts followed quickly, as an anxious public waited with home-made or "custom-crafted" receivers.

During 1922 the Department of Commerce issued over 600 commercial broadcast licenses. "Bitten hard by the radio bug," says one observer, "the public stopped winding Victrolas and pedaling player pianos and clamored to join the dial-twisting gang."

Manufacturers hurried to fill the need, and such companies as GE and Westinghouse made both sets and tubes, and even supplied complete receivers to other companies, such as RCA. Other names were big in radio construction, including Magnavox on the West Coast, Atwater Kent, Paragon and Freed Eisemann in the East, and Zenith and Crosley sold in the inland states. Out of the multiplicity of designs grew chaos, and out of chaos grew standardization. The broadcast industry was growing and maturing quickly.

The amateur short-wave buffs of the 1920s were showing up the "commercial" long-wave broadcasting giants. These week-end engineers were developing their own advanced state-of-the-art. The owner and maker of a three-tube transmitter, competing against the big stations was the first to tune his 200-meter band and send a message across the Atlantic. It was not long that ships saw the advantages of the compactness and broadcast clarity of short-wave, and the big equipment outlays of the ship-board sparks were obsolete.

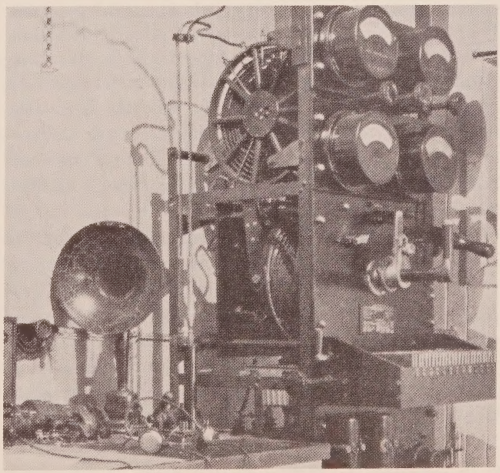
Spark transmitters, doomed to international extinction by December 31, 1939, dwindled steadily as first the self-rectifying tube conversions—remembered best for emissions of musical, AC modulated, CW tones—then oscillator amplifier CW transmitters extended the dependable range. On the Great Lakes, five-channel radio telephone equipment let ship captains communicate with land stations without carrying a radio operator. For safety in foul weather, diamond shaped direction-finder loops rose from "flying bridges" and guided ships along the coasts or into difficult harbors. And, for ships carrying only one radio operator, automatic alarms tuned to 600 meters maintained watch day and night for SOS distress calls.

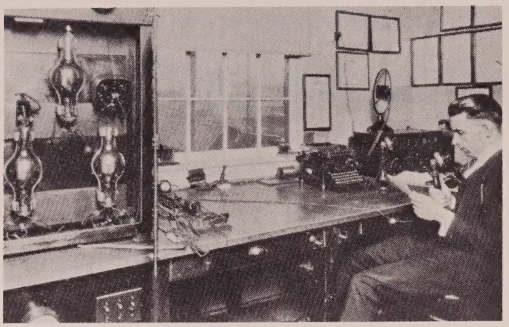
In the twenties, radio tube engineering gave amateur radio operators the famous 210 triode transmitter tube. Hams discovered that tuned antenna feeders reduced feeder losses and increased the radiated power. The first international radiotelegraph conference of 1927 assigned every nation an identifying prefix letter and set up the international amateur bands.

During 1936, engineers designed two receivers—one included bandspread on each amateur band then in use —and a 150-watt, multi-band amateur phone/CW transmitter for operation from 160 through 20 meters. A public craze for short waves in the latter half of the thirties brought the "B and C" short-wave bands to living-room receivers. In some of the more expensive sets the favorite shortwave bands spread across the whole dial the same as the standard broadcasting scale.

Receiver designs worked around a new set of tubes—the 6.3 volt glass line. Radiotron engineers introduced them to replace the 2.5-volt line because they featured better hum control and let the one line suffice for both home receivers and automobile sets. Included for the first time were the multigrid converters that simplified superheterodyne design and made the compact, transformerless AC/DC radios possible. Shortly afterwards, the 6.3-volt glass tubes gave way to metal tubes with octal bases.

SHIPBOARD 2 kw quenched-gap spark transmitter.





BROADCAST station in the late 20's.

Network affiliation of broadcast stations in all major cities made the same radio programs available everywhere and converted the public from distance-chasing to local listening. Reflecting this trend, engineers simplified station selection by designing receivers with fixed and electric pushbutton tuning.

It was about this time that Sears Roebuck & Co. put on the market a automobile radio which would mount right under the dash of any car. Soon after, Buick built a radio right into the dashboard.

Unknown to public, however, development engineers of several companies were toying with other ideas in the 1930's, such as stereo sound, and even television.

In the closing years of the thirties, black-and-white all-electronic television beckoned. The public, unable to visualize the potential delights in store for them, held back acceptance and missed the pleasures until after the second World War.

Television in America actually goes back to the early days of radio broadcasting. In those days the spirally-perforated scanning disk prevailed. Demonstration in 1923 of an electronic pickup tube by a young, Russian-born, Westinghouse engineer, V. K. Zworykin, failed to stimulate Westinghouse interest because of the dim picture, and his management ruled out further research. The General Electric Company pioneered early television. Late at night after completion of the "radio broadcasting day," GE transmitted narrow-band, experimental television pictures from Schenectady over the Company-owned radio station, WGY. Behind the screen at Proctor's theatre in Schenectady, General Electric engineers duplicated an experiment by RCA in New York City and installed a scanning disk filled with lenses instead of holes and flashed 5x6-foot television pictures on the screen as the current vaudeville actors repeated their acts at a nearby studio. Once, for publicity, GE engineers sent narrow-band TV pictures to Sydney, Australia, and received intelligible pictures right back. At a special presentation early in 1928, General Electric for the first time anywhere demonstrated home-television reception to engineers, scientists, and newspapermen. Later in 1928, Company engineers televised the acceptance speech of Al Smith, governor-elect of New York. In the course of exploring one aspect of television reception, GE engineers measured the movement of secondary images to determine the height and shifting of the Heaviside layer. By not realizing that signals reflected from the Heaviside layer would also reflect from an airplane or a ship, RADAR waited another decade for discovery.

Between General Electric's demonstration of home television and the 1939 public introduction by RCA at the New York City World's Fair, eleven years lapsed. During that interval, the pink-tinted pictures enlarged by lenses to 3 inches square and the bell-ringing type push button held in the hand to control synchronization, disappeared in favor of automatic sync and a 12-inch picture reflected from a metal mirror attached to the receiver lid and tilted 45 degrees for viewing.

The scanning disk era ended with the invention of the Iconoscope camera tube. RCA demonstration of television generated strong complaints about the "flicker in the green-tinted, reflected pictures sounded the death knell for non-interlace scanning and odd-line "interlace" followed. At the time of the demonstration, television still required two complete receivers: one for the AM picture, and one for the AM sound. By 1936, one receiver sufficed for both, white replaced the greenish cast, and scanning reached 343 lines per inch. From 1936 to 1938, RCA-NBC conducted field tests that helped the Federal Communications Commission to set the standards for black-and-white television. And by 1939 scanning rested at 441 lines and FM replaced AM sound. By 1941 experimental TV stations were operating on regular schedules in New York, Chicago and Los Angeles.

The coming of World War II dramatically changed the focus of the broadcast industry, and in many ways advanced technology a thousand times, principally for military purposes.

Following the war, the American public was asking for a multitude of things to satisfy its long lapse of sight and sound pleasures.

Other developments in the field of electronics were creating great changes that would affect broadcasters and all types of communications. Microwave was permitting greater communications flexibility to the nation's telephone system and to many industrial communications networks.

With the invention of the transistor in 1947, solid-state technology permeated every level of technology making possible compact, high speed computers and giving even Junior his own two-way radio. Miniaturization and microminiaturization promise to take us even further. Experimentation continues in the areas of laser TV, and the fields of ultrasonics, photo- and electro-luminescence.

The progress in the field of communications may yet be in its infancy. The future in broadcast engineering indeed looks bright.

THE LABOR-MANAGEMENT WHIRL

As reported by Les Finnegan in CAVIL-CADE, *distributed by* Press Associates, Inc.

• *IN PHILADELPHIA, as big league professional baseball players moved closer to the verge of a strike, syndicated sports columnist Red Smith disclosed that club owners were sounding more and more like the union-hating bosses of the 1930s. Said Smith (in the Philadelphia Inquirer and other newspapers): "By hiring as Commissioner a man who is totally committed to the side of management, the owners served notice on the players that all avenues of appeal are now closed to them and any player seeking redress of grievances had better go to his own union. Then they declared unanimous and uncompromising opposition to the central demand of the Players' Union for the right to share in the loot from national television and radio. The men who own baseball still think that if they could just get around Marvin Miller (the Players' Union spokesman) they could satisfy any ballplayer by giving him a little extra money. Yesterday they would have been right. Today they are dead wrong."*

• *IN MIAMI, FLA., the only union-approved strikebreaking in memory was recorded at Hialeah Park when pretty Diane Crump, in her second ride as a jockey, brought her horse home fifth in a 12-horse field. On Jan. 15, 13 jockeys went on strike and were fined $100 each for refusal to ride in a race that included Barbara Jo Rubin. On Feb. 7 six jockeys struck rather than compete against 19-year-old Diane, but by Feb. 11 the combination of the track stewards (all set to impose new fines) and Miss Crump's beauty and charm broke the strike completely. Said Diane after the race, "The other jockeys couldn't have been nicer."*

• *IN CINCINNATI, Burton Hillis said in a magazine article, "If the representatives of Big Business and Big Labor want to hear some really hard-nosed bargaining, they should sit in with our three children who are now re-negotiating their allowances for the coming school term."*

• *IN NEW YORK CITY, what labor has been saying for a long time about the runaway trend to more and more big business mergers was finally admitted by the Wall Street Journal. "In each of the past 10 years," said the paper, "more than 800 mergers have been recorded in mining and manufacturing industries—and the number rose to some 2300 in 1968." Only four companies now produce 98% of all American locomotives, the Journal found, and four companies share 96% of all flat glass production. Other four-company monopolies account for 94% of all telephone equipment, 81% of all cigarets, 79% of all motor vehicles, and 70% of all steel ingots. The big business daily got itself so worked up it actually sounded like a labor paper. Exclaimed the Wall Street Journal, "The merger mania rages."*

Appalachian Heritage

Cincinnati Labor Council Sponsors TV Film Documentary

Hour-long program about rural and urban poverty proves smash-hit in carrying unions' message to the public

***CHILDREN** whose families fled Appalachia to escape poverty now walk the streets and alleys of city slums searching for a better life that constantly eludes them. This is the theme of Cincinnati AFL-CIO sponsored TV film.*

***AN OLDTIMER** (below) describes how strip-mining raped his land, in the labor-sponsored documentary. Elderly are left behind by young people who migrate to cities for work.*

● Looking for an effective medium to reach the public with the message of organized labor? Sponsorship of a TV film documentary proved the right answer for the Cincinnati AFL-CIO.

The Cincinnati labor council sponsored a recent documentary titled "Appalachian Heritage," a deep and penetrating look at the major problems in the hills of Eastern Kentucky and the slums of Cincinnati.

So successful was the council's first venture into TV filmland that it is now looking into the possibility of sponsoring more programs of the same type to serve as a vehicle to deliver its union messages.

The film, produced by Avco Broadcasting, was a hit with viewers and its "commercials" apparently got through.

According to William P. Sheehan, executive secretary-treasurer of the Cincinnati AFL-CIO, there was wide response from union members and the general public praising the union participation in the production.

Both the documentary and the council's public service messages have been acclaimed by *Variety*, the show business trade publication. There has even been some talk about the documentary being considered for Emmy nomination.

The hour-long program was aired in prime time on Friday, December 13, over Avco's Channel 5 in Cincinnati, and scored extremely high in a viewer's rating survey.

The film describes how strip mining in Appalachia has robbed the land and destroyed the kind of life known to the mountain people. Despite federal and state financial aid, legislation to regulate mining and

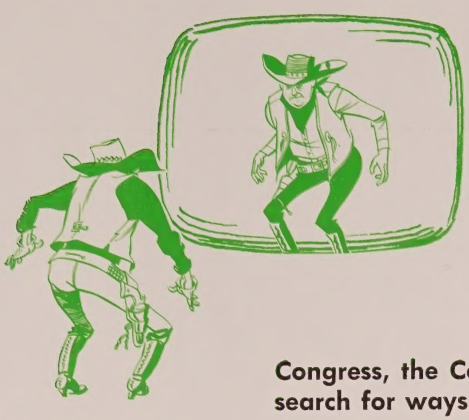
FILMING of important segments of the documentary took place in the city slums where hill people came looking for a new life.

other governmental measures, the people of the hills gave up hope for the desolate areas and moved north. The film then illustrates how these people traded one misery for another; they were unable to fit into an urban society they neither like nor understand. Thousands of the "refugees" cram the cold water apartments in the city slums and exist on welfare subsistence. The film carried the dramatic impact of the cycle of poverty experienced by these proud Appalachian people.

The council's "commercials" spotted with the documentary depicted how many of the poor from the Appalachian hills and Cincinnati slums elevated their status in society through union-won wage gains and benefits. Former Vice President Hubert Humphrey cooperated in taping one of the commercials.

The cost of sponsoring the documentary totaled $3,800, including fees associated with the production of the unions' messages.

CABINS of wall-to-wall poverty shelter embittered and forgotten people left behind to eke out an existence on eroded and abused land.



Congress, the Courts, FCC, broadcast industry search for ways to bring about . . .

An End to TV

● There's a "cloak and dagger" drama in progress on Capitol Hill and its being watched intently by the men who man the nation's TV cameras. In this case, the "cloak" represents the law, and the "dagger" represents the violence which critics say dominates present-day television. The fireworks are being set off by the Senate Communications Subcommittee, chaired by Senator John O. Pastore (D-R.I.), who is investigating TV violence.

There is much ado about the *effects* of violence on TV, and about *who can and must do something* about it: the courts, the Federal Communications Commission, Congress, or perhaps self-policing by the broadcast industry itself.

No one seems to question the fact that there is too much "blood and guts" TV fare. Yet, the producers keep producing "shoot-um-ups" . . . and presumably, the TV audience keeps watching.

Senator Pastore and his subcommittee have responded to what he says is "growing alarm" about sex and violence on the TV screen. Pastore indicates that he wants to find out what's being done wrong on TV, and then determine who and how something can be done to reverse the trend.

FCC Chairman Rosel H. Hyde has told Pastore that the First Amendment and "no censorship of programs" sections of the Communications Act prevent his agency from regulation of violence. He also states that the FCC would be the wrong agency to conduct a survey of violence.

"As the licensing agency for broadcast stations," Hyde said, "we are hesitant about encroaching on their freedom of program choice."

Mr. Pastore pleaded with the commissioners to speak privately with network executives about the quality of their programming, but Mr. Hyde indicates that even such informal approaches would be improper. The senator said that he had never hesitated to urge taste and restraint on network management, but said his efforts had been fruitless.

Meanwhile, many network officials—depending on which one you talk to—say that TV has cleaned up its house, that it is cleaning up, or that it is going to clean up programs to appear on the upcoming fall season; and others adamantly say that they see no need to clean up.

Congressmen, other than those on Pastore's committee take several divergent views on the subject of TV violence. Many feel that they should do nothing from the standpoint of legislation.

More than one congressman and FCC commissioner have indicated that it must be the TV viewing public that initiates any meaningful action. One commissioner complains that "the Commission . . . never had a complaint of too much violence on any station presented to the FCC," and "waits for complaints" from viewers about radio and television station performance before monitoring their programming. FCC Chairman Hyde replies to criticism of such a policy this way, "I would be concerned that there would be serious censorship implications if the Government undertook a program of monitoring."

Another FCC Commissioner who feels that the TV public "do something" is Nicholas Johnson. He raises the unique suggestion that Americans who feel that they are victims of injurious programming sue the networks for damages—just as other manufacturers can be sued for alleged harm from their products.

"Why shouldn't a television network be liable for the psychic harm it does millions of young children who watch the Saturday morning 'Children's Program,'" he asked.

"The television set manufacturer is legally liable for physical damage done by radiation from the set. Why

Violence!

should the network be free of responsibility for the psychic harm done by what it radiates from the set?"

"Legal liability has been an effective instrument of reform in the past, and is at least worth examination as a means of improving the most extreme instances of injurious programming," he suggested.

Johnson defended television newsmen but attacked network executives in bitter terms.

"What are these network executives doing," he asked. "What conceivable defense is there for the imposition of such standards and travail upon two hundred million Americans.

"What right have they to tear down every night what the American people are spending $52 billion a year to build up every day through their school system—just to serve the greedy striving for ever increasing profits by three corporations?"

Senator Pastore doesn't look at the networks much more favorably. He states, "the most cataclysmic thing in America today is television. We've got to clean it up. The industry has not lived up to its responsibility and it has not kept the promises it made to me. If it doesn't exercise restraint, drastic action will be taken."

The "drastic action" Pastore speaks of may come in many forms, but he has given some hint of what the TV industry can expect. He has called for a study by the Surgeon General of the United States to determine the possible harmful effects of violence on television. A letter has been written to Health, Education and Welfare Secretary Robert H. Finch asking for the study.

Broadcasters, Pastore says, "Have met charges about possible harmful effects of TV violence by claiming that no study has established a connection. A study on effects of cigarette smoking—would settle the arguments."

Even now, Pastore charged, the networks should "get on their toes. Unless they do it, someone is going to do it for them and woe be the day."

Real-Life Violence:

TRAFFIC AND DEATHS INCREASE TOGETHER

● Traffic accident deaths during 1968 increased in step with the increase in miles driven, the National Safety Council reports, so the rate of deaths per 100 million vehicle-miles—5.5—was unchanged from 1967.

"This line-holding might be thought of by some as adequate," said Howard Pyle, Council president, but such complacency only allows us to deceive ourselves."

Pyle said the December death toll, 4,960, brought the year's total to 55,500—about 5 per cent above the 53,100 deaths in 1967. Total vehicle-miles driven also increased about 5 per cent, to 1,010 billion during 1968.

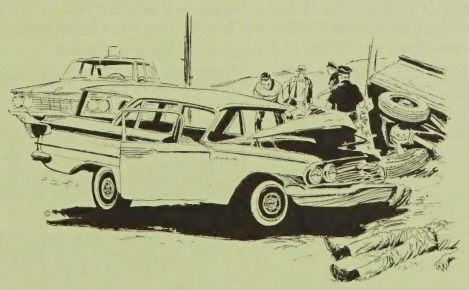
"To consider this performance satisfactory," Pyle warned, "could jeopardize the chance we have today to begin making real progress against traffic accidents.

He pointed out that, under the stimulus of new national standards for highway safety programs, state legislatures across the country are starting to move toward a united attack on accidents.

The standards call for state programs to meet certain minimums in such areas as uniform laws, safety inspections for cars, up-to-date driver licensing procedures, and chemicals tests for blood alcohol levels in drivers suspected of being intoxicated.

"The impetus of these national standards," Pyle said, "is giving America the chance to mount an effective, nation-wide attack on one of our most urgent social problems. Each state must, of course, do its part—but now it can move ahead with the assurance that it is in step with the rest of the country."

"Last year 55,500 of us died from traffic accidents—more than any other year in our history," Pyle said. "Two million suffered disabling injuries and the dollar cost reached $11.6 billion. In the face of such losses, we surely can do no less than make the most of every available countermeasure."



Denver, Colorado, is Host to the 1969 AFL-CIO

UNION-INDUSTRIES SHOW

• Denver, the capital city of Colorado, will be the site of the 1969 Union-Industries Show from May 16 through May 21. The sunny city, rich in fact and folklore shaped by such colorful characters as "Buffalo Bill" Cody, "Baby Doe" Taylor, and the "Unsinkable" Molly Brown, is an ideal site for the Show.

Founded by a handful of gold-seekers in 1858, it is the colorful center of a vast array of industry and activity—truly a gateway to adventure. The careful blend of western conservatism and 20th century reality is an appropriate setting for the world's largest free Labor-Management exhibition.

Denver is considered the center of the Rocky Mountain Empire and lies at the apex of a five-county metropolitan area of more than 1,100,000 population.

The 13th step on the West side of the Capitol is marked by a plaque exactly one mile above sea level. Known as the "Mile High City," her rarefied air and low humidity combine to give the city a unique climate. The sun shines in Denver an average of 310 days a year. Summers are warm and balmy, while infrequent snows melt quickly under the warm sun.

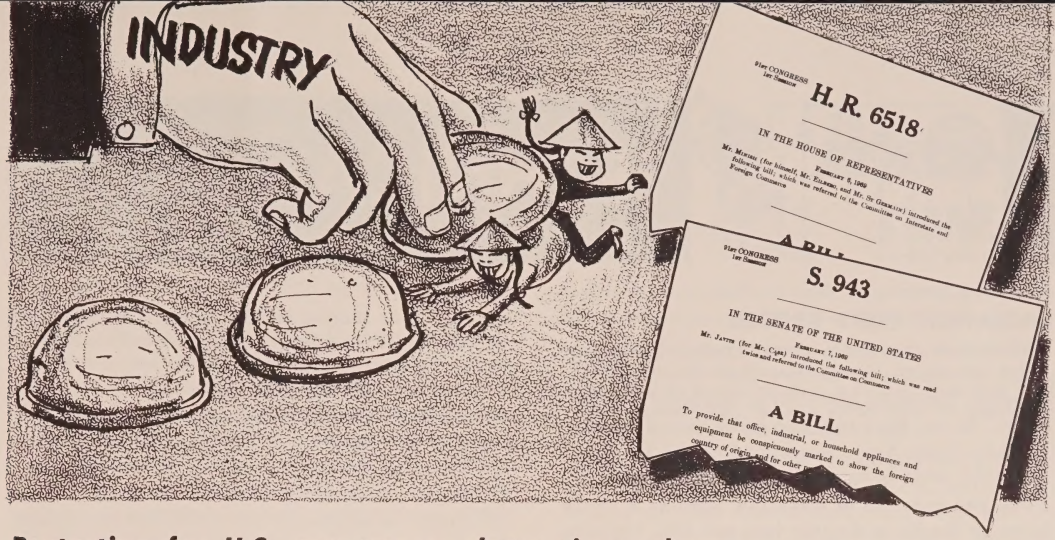
Since 1938 the general public has been accorded a unique opportunity in that it can see first-hand, scores of industry products and witness the skills of craftsmen plying their trades. In a real sense, the U-1 Show is an open-house of Labor-Management ingenuity, cooperation, and harmony.

Elaborate displays by AFL-CIO Unions and their employers vividly exhibit quality products and services —the best that is American. More than two hundred booths combine to relate the story of labor and management relations as they exist in this country.

For six days and nights, Show doors will be open from 1:00 P.M. until 10:30 P.M. The spacious new 13.1 million dollar Exhibition Hall of the Denver Convention Center will be filled with men, women and children who will leave with a knowledge of fine products and services available on the market which are produced and offered by leading companies who have collective bargaining agreements with members of AFL-CIO organizations.

***ECHO LAKE** is a favorite vacation and picnic spot along America's highest automobile highway to the top of Mount Evans at 14,260 feet. The Mount Evans drive is the most outstanding one-day scenic trip from Denver.*

***UNION-INDUSTRIES SHOW** site, Denver's brand-new Convention Center. The $13.5 million Exhibition Hall has 100,000 square feet of column free exhibit space and will be linked with Denver's existing Auditorium Arena and Theatre to form a complete convention complex. The new Hall is less than a 20-minute drive to the Colorado Rockies whose natural scenic and recreational attractions are a "no charge" extra for the U-I Show.*



Protection for U.S. consumers, electronic workers:

'Truth-in-Import Labeling' Act Proposed

● Have you ever purchased a "name brand" transistor radio or a color television set only to learn that it was actually an import from a low-wage country? More and more Americans are asking this question, and the answer it evokes is being heard all the way to Congress.

A drive is underway to push through a "Truth-in-Import Labeling" bill in the 91st Congress.

Two bills have already been introduced, one in the Senate, S-943, sponsored by Senator Clifford Case (R.-N.J.), and HR-6518 introduced in the House by Rep. Joseph Minish (D.-N.J.), and supported by Congressmen Eilberg (D.-Pa.), Dent (D.-Pa.,), Green (D.-Pa.) and St. Germain (D.-R.I.).

The proposed legislation is necessary, according to its supporters, "to protect both the job security of American workers and the free will of the consumer public, due to the trend of more and more U.S. electronic corporations to shut down production in this country in favor of importing products from low wage areas abroad to be sold under U.S. brand names."

Manufacturing statistics are very revealing. U.S. production of home radios declined by 1.25 million sets in 1968. Importation of foreign-made sets rose by nearly 3.2 million. Imports of U.S. brand radios now equal and will soon exceed domestic production.

For each tape recorder produced in the U.S., over 8 are imported, and as many imports carry a U.S. brand as are produced in this country.

Imports of U.S. brand phonographs almost doubled in 1968, while U.S. production declined. Plans of American corporations now indicate that most U.S. phonograph production is shortly to be transferred to plants overseas.

Imports of U.S. brand television sets rose almost 37 percent in 1968. Imports are certain to accelerate further, since major corporations like Westinghouse, Philco-Ford, Admiral, Sylvania and others are transferring production of color as well as monochrome TV sets to their own plants in other countries or to plants of foreign companies.

The new Senate and House bills would not turn the tide of imports, but it would let the American public know where a product is made.

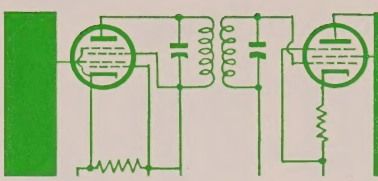
The "Truth-in-Import Labeling" bills would have these provisions:

"No person may import into the United States any office, industrial, or household appliances or equipment manufactured, produced, or assembled primarily outside the United States unless a label is permanently attached to such appliance or equipment at a place which is conspicuous at all times.

"The label shall indicate in clearly distinguishable letters of the English language the name of the manufacturer, producer, or assembler and the foreign country in which such appliance or equipment was manufactured, produced or assembled. The letters indicating such foreign country shall be at least one-half the height and width of the name of the make of the appliance or equipment, but not less than one-fourth inch in height."

The bill specifies that the label be of metal or other "appropriate material" as specified by the Federal Trade Commission.

Violation would "constitute an unfair or deceptive act or practice in commerce . . ." and would be "subject to enforcement under . . . the Federal Trade Commission Act." Rules and regulations to carry out provisions of the labeling law would be enacted and carried out by the Federal Commission.



TECHNICAL Notes

RADIATION TESTS PROBED

Those do-it-yourself TV screen radiation detectors are under investigation by the New York City Health Department. Nationally advertised in magazines and newspapers, the test kits—marketed under several names—purport to detect X-rays emanating from the TV picture tube which could be harmful to the viewers' health.

The kits make use of film strips taped to a special device or directly to the tube face, and after exposure, are returned to the manufacturer who promises to "advise you if your TV is radiating X-rays."

According to the N.Y.C. city health code, any X-ray tests must be made only under supervision of a "qualified expert." The particular company being investigated is reported not to have such an "expert," thus putting it in violation of the law.

According to the maker, the film strips were anaylzed only from the standpoint of whether or not X-ray exposure was present, not whether it exceeded the 0.5-mR legal limit. The maker said, "any exposure is harmful," and "you don't have to be an expert to tell whether the film has been exposed."

Flash! PROGRESS MEETING—San Diego, July 22-24

TV AIDS TIME STANDARDS

In a continuing effort to upgrade the accuracy and precision of National Bureau of Standards time and frequency broadcasts, Bureau scientists and engineers have borrowed from commercial television in Denver, Colorado and from Czechoslovakian know-how.

Television broadcasts from Denver TV stations are now a key element in the chain of controls for precision and accuracy of the nation's time and frequency broadcasts.

The system works this way. A commercial TV table model set is operated at the NBS atomic clock end in Boulder, and another at the NBS broadcast station end in Fort Collins. Both TV sets are tuned to the same Denver TV channel.

Both TV sets are connected to sensitive electronic equipment which records the arrival of periodic pulses on the carrier wave. The "synch pulses" are a known distance apart and are easily identified by electronic devices which "tag" them as they arrive at the location of each recording device.

The sensitive equipment records the time of arrival of these pulses at the "atomic clock" in Boulder and at the NBS radio stations in Fort Collins. The time delay between the TV transmitter near Denver and the Boulder and Fort Collins receivers is accurately known to a tenth of a millionth of a second. From this information NBS scientists calculate the time difference between two clocks —the atomic clock at Boulder and the one at Fort Collins which controls the time signal broadcasts.

The absolute accuracy of the measurement is "conservatively" set at plus or minus a millionth of a second, but the day-to-day precision often approaches plus or minus one-tenth of a millionth of a second.

Flash! PROGRESS MEETING—San Diego, July 22-24

AEROMEDICAL MONITORING

The National Aeronautics and Space Administration has released details of its advancements in the field of bioinstrumentation, as developed through the space mission programs. A new booklet, "NASA Contributions to Bioinstrumentation Systems," tells how much of the worldwide Manned Space Flight Network is devoted to transmission and analysis of biomedical data, much of which may have relevance to more common health and medical problems.

FM radio stations, biomedical telemetry, computers, and several ground tracking stations around the globe, played a role in providing meaningful information to the Houston Mission Control Center.

Such information as heart rate, respiration, body temperature, and other medical information were logged on a huge medical monitor console and then relayed to the flight surgeon. The "major aim of the survey," states the booklet, "has been to promote the application of NASA bioinstrumentation contributions to nonaerospace medicine and industry." The miracles of modern communications and electronics are finding even wider application.

Flash! PROGRESS MEETING—San Diego, July 22-24

BIGGER COLOR TUBES

Sylvania will soon be introducing a new line of color TV tubes which the manufacturer says will include the industry's largest, and the first 110-deg. color tubes.

A new large screen 25-inch viewable, 90 degree square tube is included among the new products. Also unique is the Sylvania 18-inch viewable 110-degree tube.

APOLLO 9 TV SPLASH

The earth-orbiting Appollo 9 mission in March was a splashing—or more properly, a splashdown—success as far as TV coverage was concerned. After Cape Kennedy rocket launch of the three spacemen, Schweickart, McDivitt and Scott, there was little the TV networks could offer but similated demonstrations and some brief live broadcasts, which gave radio reporting a point in its favor.

But on Thursday, March 11, television proved its mettle as it followed the parachuted "Gumdrop" out of the clouds into the calm sea. This was the first spacecraft descent visible to TV cameras, of all manned missions staged by NASA. The cameras, mounted on the U.S. aircraft carrier *Guadalcanal*, focused their telephoto lens on the capsule until the astronauts were safely removed and escorted down the traditional red carpet to a heroes' welcome.

The transmissions from space, though not extensive in length or frequency, were highly regarded. A special Westinghouse camera in the lunar module, "Spider," was praised, as were pictures of maneuvers outside the spacecraft. Some difficulty was noted in the audio reception from the lunar module from time to time.

Flash! PROGRESS MEETING—San Diego, July 22-24

SMILE . . . YOU'RE ON THE PHONE

By 1975 a housewife who telephones her husband at the office may want to check her lipstick first. She could be "on camera" during the conversation.

After decades of testing, audiovisual telephones are well out of the impossible dream stage. Picturephone service will be introduced in a few major cities in the early 1970's a spokesman for the American Telephone and Telegraph Company told the National Geographic News Service.

By 1975, he said, "a considerable number of Picturephones will be in operation."

Cost of the service, however, may discourage social chitchat. Officials estimate the basic charge will range up to $100 a month, and long-distance calls will cost several times more than non-visual messages.

Experimental Picturephone units have come a long way since 1927, when Secretary of Commerce Herbert Hoover spoke from Washington with Walter S. Gifford, A.T.&T. president, in New York.

The newest models transmit drawings, provide sharp pictures under poor lighting conditions, and allow users to talk and listen over speakerphones rather than handsets.

Images are projected on a 5-inch-high, 5½-inch-wide screen. A control unit enables viewers to "zoom" electronically for a close-up or wide-angle picture.

On a limited, by-appointment-only basis, public Picturephone service has connected Washington, New York, and Chicago since 1964.

READING TIME

Review of Current Books on Labor, Broadcasting & Recording

101 QUESTIONS AND ANSWERS ABOUT CATV AND MATV, by Robert E. Baum and Theodore B. Baum. (Catalog No. 20655). Published by Howard W. Sams & Co., Inc., 4300 West 62nd Street, Indianapolis, Indiana 46268. Size: 96 pages, 5½ x 8½". List Price: $2.50 (Canada, $3.15).

This book is devoted to the applications of CATV and MATV—how they are used in schools, public safety, industry and home entertainment. The book is especially pertinent today because modern apartment buildings, hotels, and motels make individual television antennas impractical.

This six-part book covers the technology of CATV and MATV from an easy-to-understand explanation of the systems to an exciting chapter on the future of CATV.

The book is a handy source of information for both the television technician and the user. The information presented is clear and to the point. Yet, the whole scope of CATV and MATV is covered in adequate depth for all but CATV equipment design engineers.

THE MODERNIZED METRIC SYSTEM—The International System of Units (SI) National Bureau of Standards Special Publication 304, (Illustrated Wall Chart) 50 cents. (Order from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402; the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151; or from local U. S. Department of Commerce Field Offices.)

Attractively printed by a four-color process, this illustrated wall chart presents the six base units of the present-day form of the Metric System, or International System (internationally adopted abbreviation: SI) as it is now being called, some derived units defined directly in terms of the base units, and the relation between SI units and the U.S. customary units—foot, pound, quart, etc.

Occupying approximately the upper third of the chart are: an introductory statement concerning the International System and its relation to the U.S. customary units; full-scale drawings of a meter stick and a yard stick, side by side; perspective drawings of cubes with volumes of 1 cubic decimeter and 1 liquid quart, respectively, giving a good idea of both their absolute and relative sizes; and similar drawings.

The lower-two-thirds of the chart is divided into six panels, one for each of the six base SI units: the meter (length), second (time), kilogram (mass), kelvin (temperature), ampere (electric current), and candela (luminous intensity). Name, abbreviation, ad definition are given for each.

STATION BREAKS

24-HOUR WEATHER WATCH

A unique service has been instituted by Coastal Community TV Inc. of Galveston, Texas permitting viewers to see a 24-hour radar weather watch. The local cable station is devoting a single, exclusive channel for a round-the-clock radar weather report direct from the U.S. Weather Bureaus post in that frequently storm-battered island city.

Using special equipment both at the Bureau office and station studio, the pay-TV customers see the actual radar-scope superimposed over a map of the Galveston area, with information and explanations penciled in. The headend equipment, which cost the station $7500, was made by ITT. It maintains the persistence of the radar information for up to 15 minutes at a time.

Flash! PROGRESS MEETING—San Diego, July 22-24

TV, RADIO SALES SET RECORD

Viewer and listener ratings should continue to rise, based on the sheer strength of numbers alone. Both the total new TV, home radio, auto radio, FM radio, and FM auto radio markets set new records for sales in the year just past.

There were 6.2 million color television sets sold in the U.S. in 1968, while total TV sales in the year totalled 13.2 million units. It is not surprising (though appalling) that foreign imports amounted to 11 percent of the total TV market last year, compared to 6 percent in 1967. (See related article on page 13 of this issue).

The total home radio market, (not including TV and phonograph combinations and auto radio), reached 34.3 million units in 1968, compared to 31.7 million the year before. Foreign label imports accounted for 66 percent of sales, compared to 60 percent in 1967.

The total 1968 auto radio market accounted for 12.5 million units, up almost 33⅓ percent from 1967's 9.5 million.

FM home radio sales amounted to 15.9 million units in 1968, compared to 11.7 million units the previous year. FM accounted for 47 percent of the home radio market in 1968, compared to 37 percent in 1967 and 30 percent in 1966.

The FM auto radio market reached 1.4 million in 1968, compared to 941,000 in 1967 and 653,000 in 1966, accounting for 12 percent share of the market in 1968, compared to 10 percent in 1967, and 6.8 percent in 1966.

'CONFLICT OF INTEREST' QUESTIONED

Are newspapers ineligible for ownership of broadcast station licenses, as the FCC now holds? The American Newspaper Publishers Association thinks not, and it also feels that the commission is overstepping its authority if it even considers that subject in present one-to-a-customer rulemaking proceedings. In a statement filed with the FCC (in response to Justice Department suggestions that it break up newspaper-broadcast cross-ownership), ANPA points out that courts have held that the Communications Act does not authorize FCC to rule the newspapers ineligible for broadcast licenses, and that Congress has made such FCC action clearly invalid.

Flash! PROGRESS MEETING—San Diego, July 22-24

SHOOT FROM MOVING VEHICLE

Lewron Television, Inc. has introduced its Mini-mobile unit, a complete videotape system designed to record while in motion. Cameras are positioned around the sides and on top of the 21-foot mobile cruiser.

The Mini-Mobile also features radio frequency microphones which can be beamed from distances of several hundred feet while the unit is rolling and recording video.

LAST LAUGH